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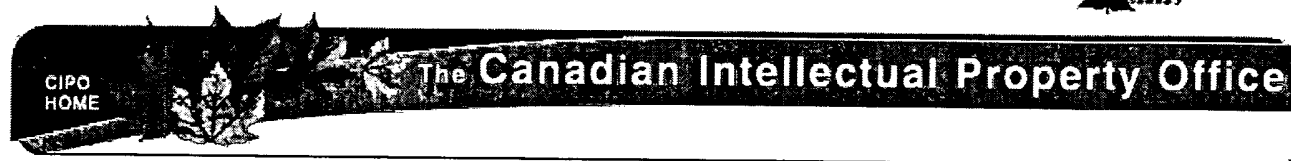
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(12) **Patent:**

(11) **CA 860279**

(54) **ALKALINE CLEANSER CONTAINING BLEACH**

(54)

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ABSTRACT:

CLAIMS: [Show all claims](#)

*** Note: Data on abstracts and claims is shown in the official language in which it was submitted.

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The present invention relates to a bleaching and disinfecting composition. It further relates to cleanser compositions containing a source of available chlorine for effecting bleaching and disinfecting action. More particularly, the present invention relates to cleanser compositions containing a stable compound which is a source of available chlorine characterized in that the composition also contains sulfamic acid, or water-soluble sulfamate, which under the conditions of use, improves the speed of bleaching and cleaning of the composition when the composition is used on food stains, while the composition is stable in storage.

The use of cleanser compositions having bleaching and disinfecting characteristics is well known. However, certain stains such as tea stains are difficult to remove even with effective bleaching compounds.

The use of sulfamic acid with hypochlorite bleaches for paper pulp bleaching is old as described in U.S. Patent 3,177,111. Under the typical conditions encountered in paper pulp bleaching, the sulfamic acid slows down the bleaching action of the hypochlorite.

SUMMARY

According to a broad aspect of this invention there is provided a bleaching cleanser composition having a superior ability to bleach food stains consisting essentially of:

(a) from 0% to about 90% by weight of a finely divided water-insoluble abrasive;

(b) from 0% to about 10% by weight of a water-soluble anionic, nonionic, zwitterionic, or cationic organic detergent;

(c) from 0% to about 60% by weight alkaline detergency builder;

(d) a stable compound which is a source of available chlorine in an amount to provide from about 0.05% to about 5% available chlorine; and



(e) sufficient sulfamic acid or water-soluble sulfamate to provide a ratio of available chlorine to sulfamic acid of from about 500:1 to about 1:1, the composition having a pH under use conditions of at least about 10.5.

Although the prior art has disclosed that the combination of a hypochlorite bleach and sulfamic acid is a slower, less rigorous bleaching agent than the hypochlorite alone when used in the bleaching of paper pulp, it has been surprisingly discovered that under the conditions which occur in the use of an alkaline cleanser, such as described herein, the sulfamic acid improves the speed of bleaching of the cleanser when it is used on, e.g., tea stains and ferric tannate stains which are representative of stains from foods containing tannic acid. High alkalinity and hypochlorite bleaches will normally remove most stains readily. However, some stains such as ferric tannate and tea stains are difficult to remove quickly. It will be appreciated that the quicker a cleanser removes a stain, the more effective it will be for the housewife. The speed with which the compositions of this invention remove tannate and tea stains from dishes, sinks, etc. is enhanced by the presence of the sulfamic acid or sulfamate.

Another stain which is removed at a faster rate when the sulfamic acid is present is FD&C #4 Red food coloring.

Suitable compounds which provide a source of available chlorine include chlorinated trisodium orthophosphate, trichloro-cyanuric acid, potassium and sodium dichlorocyanurates, 5,5-dimethyl-1,3-dichlorohydantoin, sodium and potassium benzenesulfon-chloramines, sodium and potassium para-toluenesulfonchloramines, sodium and potassium chloro bromo cyanurates, 1-chloro-3-bromo-5,5-dimethyl hydantoin, N-chloro succinimide, trichloro- and hexachloro-melamines, and mixtures thereof. The preferred chloro compound is chlorinated trisodium orthophosphate since it is relatively inexpensive.

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The composition can also contain inorganic bromides, organic bromides or compounds which provide available bromine. Suitable inorganic bromides are those which are water-soluble especially the alkali metal bromides such as sodium and potassium bromides. Suitable organic bromides include tetramethyl ammonium bromide, tetraethyl ammonium bromide, dimethyl coconut alkyl benzyl ammonium bromide, trimethyl dodecyl ammonium bromide and trimethyl benzyl ammonium bromides. Suitable compounds which provide available bromine include the chloro bromo cyanurates, succinimides, and
10 hydantoins mentioned above and the corresponding dibromo cyanurates, bromo succinimide, and dibromo hydantoin. Other sources of available bromine include the bromo melamines and brominated trisodium orthophosphate. These bromides and sources of available bromine also increase the speed of bleaching of the compositions containing available chlorine.

The bromide ion can be from about 1% to about 150% by weight of the amount of available chlorine present, preferably from about 25% to about 135%, and the bromine can range from about 0.5% to about 50% by weight of the amount of available chlorine present,
20 preferably from about 17% to about 35%. The utility of bromides in combination with hypochlorite bleaches is described in more detail in U.S. Patent 2,815,311.

The sulfamic acid, or water-soluble sulfamate, is present in an amount sufficient to provide a ratio of available chlorine to sulfamic acid (Molar equivalents of sulfamate can be substituted for the sulfamic acid.) of from about 500:1 to about 1:1, preferably from about 100:1 to about 1.5:1; more preferably from about 10:1 to about 1.5:1, and most preferably from about 6:1 to about 3:1. Excess sulfamic acid tends to hurt performance by slowing the
30 speed of bleaching and adds to the cost of the product. Also a small drop in detergency will result from using excess sulfamic acid since it undesirably lowers the pH of the composition.

"Sulfamic acid" as used herein also includes water-soluble sulfamates which give the sulfamate ion in solution. Especially preferred sulfamates include sodium and potassium sulfamates. Other water-soluble sulfamates include magnesium, calcium, lithium, and aluminum sulfamates. Sulfamic acid itself is preferred since it is not very hygroscopic. Sodium and potassium sulfamates are also preferred. In a preferred embodiment, the sulfamates are dissolved in water and sprayed on the abrasive described herein-
after, and dried to provide a composition which is unexpectedly
10 relatively unaffected by the hygroscopicity of the sulfamates.

The sulfamic acid and sulfamates are unique in that they provide improved bleaching performance without adversely affecting the physical characteristics and other performance characteristics of the compositions. For example, bromides can increase the speed of bleaching, but they can affect the odor of the composition during use.

Sulfamic acid and sulfamates improve the odor stability of many perfume compounds used in bleaching compositions of the type disclosed herein. In a preferred embodiment the compositions of
20 this invention contain from about 0.01% to about 1% perfume, preferably from about 0.1% to about 0.3%. The sulfamate stabilizes the perfume in the presence of the available chlorine, especially when the perfume contains aldehydes, alcohols, esters and/or ketones. Protection for the aldehydes appears to last for a shorter time than for the alcohols, ketones, or esters, but in all cases there is an improvement in perfume stability. This is very surprising when considered against the background that the sulfamic acid and/or sulfamates improve the speed of bleaching.

In a preferred aspect of this invention, a water-insoluble abrasive comprises a major portion of the cleanser to provide a scouring cleanser. The scouring cleansers of this invention contain at least 60% by weight abrasive, preferably from about 60% to about 95% . Almost any water-insoluble particulate abrasive can be used in the compositions of this invention. Examples of water-insoluble abrasives suitable for use in the cleanser compositions of the present invention include finely divided particulate siliceous abrasives such as quartz, silica, feldspar, pumice, pumicite, 10 zirconium silicate, volcanic ash, diatomaceous earth, china clay, whiting, bentonite, talc and the like, calcium carbonate and aluminum oxide. A suitable particle size for this abrasive material is from about 0.5 mm. diameter to about 0.001 mm. diameter. Finer particles can also be used.

The amount of abrasive used is determined by the end use. If the cleanser is to be used for dishwashing in an automatic dishwashing machine, then there should not be any abrasive in the composition.

The water-soluble organic detergents which can be used in the scouring cleanser composition of this invention are anionic, nonionic, zwitterionic and cationic organic detergents. The preferred class of organic detergents is the anionic non-soap class. The preferred anionic detergents are alkali metal alkyl benzene sulfonates wherein the alkyl group contains from about 10 to about 18 carbon atoms and alkyl sulfates which contain from about 10 to about 18 carbon atoms and wherein said alkyl groups are preferably straight chain alkyl groups.

10 Examples of suitable detergents for use in scouring cleanser compositions of this invention include those detergents described in U.S. Patent 3,318,817 at column 4, line 37, through column 6, line 30, and column 9, line 6 through line 57. This list is merely illustrative.

 Suitably cationic detergents are those having the formula $R - N(R^2)_3^{(+)} X^{(-)}$ wherein R is an alkyl chain containing from about 8 to about 20 carbon atoms, each R^2 is selected from the group consisting of alkyl and alkanol groups containing from 1 to 4 carbon atoms and benzyl groups there being normally no more than
20 one benzyl group and two R^2 groups can be joined by either a carbon-carbon, either, or imino linkage to form a ring structure, and X represents a halogen atom, sulfate group, nitrate group or other pseudohalogen group. Specific examples are coconut alkyl trimethyl amine chloride, dodecyl dimethyl benzyl bromide, and dodecyl methyl morpholino chloride.

 The above organic detergents are used in amounts not to exceed 10% by weight of the composition and preferably in amounts of about 1% to about 6% by weight of the composition. The purpose of the organic detergent is to provide the primary detergency
30 effect in cooperation with the alkaline detergency builders described hereinafter. The lower limit is set by the detergency requirement and the upper limit is set based on such considerations as

streaking, rinsing, sudsing etc.

The alkaline detergency builders provide the proper pH for the composition and enhance the detergency effect of the organic detergent. The alkaline detergency builder should be used in amounts less than about 60% by weight of the composition preferably in amounts from about 3.5% to about 15% by weight of the composition. Suitable examples of alkaline detergency builders include those described in U.S. Patent 3,309,319 at column 4, line 44 through column 5, line 9.

10 In addition to the alkaline detergency builders, the compositions can also contain up to about 5% by weight of the composition of borax (sodium tetraborate decahydrate) in accordance with the disclosure of the copending Canadian application of Franklin Dale Moore, Serial Number 023,334, filed June 24, 1968.

The borax is preferably used with chlorinated trisodium phosphate which it stabilizes during storage. The stabilization of the chlorinated trisodium phosphate also improves the odor of the compositions.

20 Other ingredients can also be present in the composition of this invention. Suitable inert inorganic salts can also be included in the compositions in amounts less than about 20% by weight of the composition. Examples of inert inorganic salts include sodium chloride, sodium sulfate, potassium chloride, potassium sulfate, etc. Other minor ingredients which can be included are soil suspending agents such as sodium carboxymethylcellulose, sodium carboxymethylhydroxyethylcellulose, optical brighteners, dyes pigments, antibacterial agents, tarnish inhibitors such as benzotriazole, etc.

30 The invention can be better understood by reference to the following specific examples.

In Examples I-V, the test procedure was as follows:

"Formica" panels were cleaned with silica abrasive and oxalic acid. The panels were then covered with a concentrated tea solution, then with 0.1 M $\text{FeSO}_4 \cdot 7 \text{H}_2\text{O}$, then with 0.1 M Na_2CO_3 and finally with the concentrated tea solution again. The panels were then dried, rinsed, and wiped. This procedure was repeated until a uniform stain was obtained.

Fast Bleaching Test

25% slurries of the cleanser samples in distilled water were prepared. These slurries were then poured over the stained panels as soon as possible after the preparation of the slurries. The stained panels were bleached while they were sitting in a rack which held the panels at a 65° angle from the horizontal. Each cleanser solution is poured over one portion of a stained panel for a five second interval and the panel is then immediately rinsed and wiped dry. After the panel has been treated with all of the slurries on separate and distinct sections of the panel, the different portions of the panel are graded for whiteness on a 1 to 10 scale, wherein 10 represents absolute whiteness and one represents no stain removal, by three graders and the grades given herein are the average grades achieved by each of the samples.

EXAMPLE I

<u>Composition</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Chlorinated Trisodium Orthophosphate (3.5% sodium hypochlorite)	17.3	15.75	17.3	15.75
Sulfamic Acid	0.20	0.15	-	-
Borax decahydrate	3.0		3.0	
Powdered Detergent*	13.3	13.3	13.3	13.3
Perfume	0.15	0.15	0.15	0.15
Silica Abrasive (35-200 mesh, 30% through 200 mesh)	← Balance →			
10 Available chlorine/sulfamic acid	3	3		
Whiteness (Fast bleaching test)	9.8	8.8	7.0	6.0

* The powdered detergent was a spray dried granule having the formula: Sodium alkyl (C₁₁) benzene sulfonate -17.3%; sodium toluene sulfonate -2.0%; sodium tripolyphosphate -49.5%; sodium silicate (1.6 ratio) -6.1%; sodium sulfate -13.9%; minor ingredients including unsulfonated materials, pigment, etc. - 1.2%; and water - balance.

EXAMPLE II

In this Example, varying amounts of sulfamic acid were added to composition 3 of Example I, replacing abrasive.

<u>Composition</u>	1	2	3	4	5	6	7
% Sulfamic Acid	0	0.05	0.1	0.15	0.2	0.3	0.4
Available Chlorine/ Sulfamic Acid		12	6	4	3	2	1.5
5 Whiteness (Fast bleaching test)	6.7	7.3	9.5	9.5	8.3	7.5	7.6

The above series demonstrates the importance of the ratio of sulfamic acid to available chlorine.

EXAMPLE III

- 10 In this Example, varying amounts of phosphoric acid (to adjust pH) were added to compositions corresponding to Composition 4 of Example I. Compositions 2, 4, 6 and 8 also contained sulfamic acid.

<u>Composition</u>	1	2	3	4	5	6	7	8
15 % Sulfamic Acid	0.0	0.12	0.0	0.12	0.0	0.12	0.0	0.12
pH	9.0	9.0	10.0	10.0	11.0	11.0	11.5	11.5
Whiteness (Fast Bleaching Test)	3.8	2.5	5.0	4.2	5.5	6.5	7.4	8.7

- 20 This Example demonstrates that at a lower pH than about 10.5, e.g., a pH of 9 or 10, the sulfamic acid actually hurts the speed of bleaching, but at pH's above about 10.5 the speed of bleaching is enhanced.

EXAMPLE IV

- 25 0.183% of sodium sulfamate was added respectively to Compositions 3 and 4 of Example I, which had been modified to contain 10.5 and 16.7% of chlorinated trisodium orthophosphate respectively. These compositions were then tested against Compositions 3 and 4 of Example I and the results were as follows:

	<u>Whiteness</u>
Composition 3	7.8
Composition 4	8.2
Composition 3 plus sodium sulfamate	8.6
5 Composition 4 plus sodium sulfamate	9.1

EXAMPLE V

The following detergent composition is suitable for use in a mechanical dishwasher.

10	The chlorinated trisodium orthophosphate of Example 1	22.0%
	Sodium tripolyphosphate (anhydrous)	44.5%
	A 50/50 mixture of sodium silicates having $\text{SiO}_2:\text{Na}_2\text{O}$ ratios of 2.6 and 3.2	14.0%
15	Sulfamic acid	0.1%
	Tallow alcohol ethylene oxide condensate (11 moles of ethylene oxide per mole of alcohol)	2.6%
	Water	balance

20

EXAMPLE VI

The following test procedure was used in this Example.

Etched porcelain plates were stained with a ferrous tannate solution and the stains were set with a sodium carbonate solution to form uniform stains. 25% slurries of the cleanser samples in
 25 distilled water were prepared and poured slowly and continuously over a spot of the stain until the stain was removed from the spot and the time needed to remove the spot was recorded. The "Average Time to Bleach" is an average of four runs on four different spots. The lower the elapsed time, the faster is the

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bleaching.

In the following runs (1-6), varying amounts of sulfamic acid were added to the basic formula of 13.3% of the detergent of Example I, 15.9% chlorinated TSP (.52% available chlorine), 0.15% perfume, and the balance the silica sand abrasive of Example I. The pH's of 5% slurries of all of these products were about 11.5.

10	Run	% Sulfamic Acid	Ratio of Available Chlorine to Sulfamic Acid	Average Time to Bleach (seconds)
	1.	0.0		28
	2.	0.05	10.4	13.3
	3.	0.1	5.2	10.5
	4.	0.125	4.2	9.0
15	5.	0.2	2.6	8.5
	6.	0.3	1.7	10.5

In the following runs (7-12), varying amounts of sulfamic acid were added to the basic formula of 13.3% of the detergent of Example I, 21.8% chlorinated TSP (.71% of available chlorine), 0.15% perfume, 3.0% borax, and the balance the silica sand abrasive of Example I.

The pH of 5% slurries of all of these products was about 11.2.

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<u>Run</u>	<u>% Sulfamic Acid</u>	<u>Ratio of Available Chlorine to Sulfamic Acid</u>	<u>Average Time to Bleach (seconds)</u>
7.	0.0		26.8
5 8.	0.05	14.2	9.3
9.	0.1	7.1	7.0
10.	0.125	5.7	8.8
11.	0.2	3.6	7.5
12.	0.5	1.4	7.5

10 The sulfamic acid increases the speed of bleaching of the chlorinated trisodium orthophosphate in the above composition.

 In the following runs (13-19), varying amounts of sodium sulfamate were added to the basic formula of 13.3% of the detergent of Example I, 15.75% chlorinated TSP (about
15 .54% available chlorine), 0.15% perfume, and the balance the silica sand abrasive of Example I. The pH's of 3% slurries of all of these products were about 11.5.

<u>Run</u>	<u>% Sodium Sulfamate</u>	<u>Equivalent % Sulfamic Acid</u>	<u>Ratio of Available Chlorine to Sulfamic Acid</u>	<u>Average Time to Bleach (seconds) (Based on 8 Runs)</u>
13.	0	0	∞	27
14.	0.001	0.0008	700	23
15.	0.005	0.0041	132	20
25 16.	0.01	0.0082	66	19
17.	0.03	0.0244	18	19
18.	0.10	0.0815	6.6	15
19.	0.15	0.1222	3.6	13

EXAMPLE VII

When four separate compositions having the basic formula of 13.3% of the detergent of Example I, 15.75% chlorinated TSP (about 0.54% available chlorine), 0.15% sodium sulfamate, 0.15% of each of the following perfume compositions, and the balance the silica sand abrasive of Example I are prepared, the compositions containing the perfume compositions are stabilized with respect to the odor of the perfumes as compared with similar compositions containing no sodium sulfamate.

10	<u>COMPOSITION I</u>	
	<u>Perfume Component</u>	<u>% By Weight of the Perfume Composition</u>
	Phenyl Ethyl Alcohol	25
	Citronellol	15
15	Geraniol	15
	Linalcol	10
	Terpineol	25
	Cinnamic Alcohol	5
	Borneol	5
20	Eucalyptol	1
	Eugenol	1
	Rhodinol	1
	Nerol	1
	Lauric Alcohol	<u>1</u>
25		100

30	<u>COMPOSITION II</u>	
	<u>Perfume Component</u>	<u>% By Weight of the Perfume Composition</u>
	Benzaldehyde	5
	Citral	5

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<u>Perfume Component</u>	<u>% By Weight of the Perfume Composition</u>
Cinnamic Aldehyde	5
Cuminic Aldehyde	5
5 Decyl Aldehyde	10
Undecyl Aldehyde	10
Nonyl Aldehyde	10
Vanillin	10
Heliotropin	10
10 Paratertiary Butyl Alpha Methyl Hydro Cinnamic Aldehyde	10
Hydroxy Citronellal	10
Phenyl Acetaldehyde	<u>10</u>
	100

COMPOSITION III

<u>15 Perfume Component</u>	<u>% By Weight of the Perfume Composition</u>
Hexyl salicylate	8
Benzyl Acetate	8
Terpinyl Acetate	20
Phenyl Ethyl Acetate	3-1/2
20 Trichloromethyl phenyl carbonyl acetate	6
Bornyl Acetate	10
Cedryl Acetate	10
Geranyl Acetate	2
Lavandin	20
25 Methyl salicylate	1
Benzyl salicylate	<u>11-1/2</u>
	100

COMPOSITION IV

<u>Perfume Component</u>	<u>% By Weight of the Perfume Composition</u>
Acetophenone	1
Coumarin	50
Para hydroxy phenyl butanone	1
Ionone	30
Cis Jasmone	2
Ethyl Amyl Ketone	1
Methyl Naphthyl Ketone	5
Nonalactone	3
10 Methyl heptenone	2
Undecalactone	<u>5</u>
	100

The perfume composition of Composition 3 is stabilized the most by the sodium sulfamate and the perfume composition of Composition 2 is stabilized by the sodium sulfamate to a remarkable extent for a shorter period of time. Composition 1 is stabilized to a lesser extent and Composition 4 is stabilized the least amount by the sodium sulfamate. Sulfamic acid and other water-soluble sulfamates, e.g., potassium sulfamate when substituted on a molar basis for the sodium sulfamate will also stabilize the perfume compositions of this Example.

When, in the above Examples, the following builders are substituted, either wholly or in part, e.g., a 1:1 ratio, for the sodium tripolyphosphate, substantially equivalent results are obtained in that the sulfamic acid and/or sulfamates improve the speed of bleaching of the compositions so long as the pH of the composition under usage conditions is maintained above about 10.5: carbonates, tripolyphosphates, pyrophosphates, hexametaphosphates, ethylene-diaminetetraacetates, N-(2-hydroxyethyl)-ethylene diamine triacetates, nitrilotriacetates, N-(2-hydroxyethyl)-nitrilodiacetates, phytates, ethane-1-hydroxy-1,1-diphosphonates, methylene diphosphonates, ethylenediphosphonates, isopropylidene diphosphonates,

benzylmethyldiene, diphosphonates, chloromethyldiene diphosphonates, polyitaconates, polyaconitates, polymaleates, polymesaconates, polyfumarates, polymethylene malonates, polycitronates and 1:1 copolymers of the preceding polymers with ethylene, said polymers having molecular weights of approximately 175,000 and mixtures thereof in e.g. a 1:1 ratio by weight the cations of said builders being sodium or potassium cations.

When in the above examples the following abrasives are substituted, either wholly or in part, (e.g., a 1:1 ratio by weight),
10 for the silica abrasive, substantially equivalent results are obtained in that the sulfamic acid and/or water soluble sulfamates improve the speed of bleaching of the compositions: feldspar, pumice, pumicite, zirconium silicate, volcanic ash, diatomaceous earth, china clay, whiting, bentonite, talc, calcium carbonate and aluminum oxide where the above abrasives have the same particle size as the silica in the above examples.

When in the above examples the following detergents are substituted either wholly or in part (e.g., 1:1 ratio by weight)
20 for the sodium alkyl benzene sulfonate detergent substantially equivalent results are obtained in that the sulfamic acid and/or water soluble sulfamates improve the speed of bleaching of the compositions.

Sodium and/or potassium

- (a) Coconut soap;
- (b) Tallow soap;
- 5 (c) Alkyl sulfate wherein the alkyl is derived from coconut oil;
- (d) Alkyl sulfate wherein the alkyl radical is derived from tallow;
- 10 (e) Alkyl sulfonates prepared by sulfonating alpha olefins containing an average of about 12 carbon atoms;
- (f) Alkyl benzene sulfonates containing straight alkyl chains containing an average of about 12 carbon atoms;
- 15 (g) Alkyl glyceryl ether sulfonates wherein the alkyl group is derived from coconut oil;
- 20 (h) Coconut oil fatty acid monoglyceride sulfates wherein the fatty acid group is derived from coconut oil;
- 25 (i) Fatty acid monoglyceryl sulfates wherein the fatty acid group is derived from coconut oil;
- 30 (j) Alkyl ethylene oxide sulfates wherein the alkyl radical is derived from tallow, and where there are about 3 moles of ethylene oxide per mole of fatty alcohol;
- 35 (k) Alkyl phenol ethylene oxide sulfates containing about 4 units of ethylene oxide per molecule in which the alkyl radical contains about 9 carbon atoms;
- 40 (l) Fatty acyl isethionates wherein the fatty acyl groups are derived from coconut oil;

- 5 (m) The condensation product of ethylene oxide with a condensation product of propylene oxide and propylene glycol, the ethylene oxide constituting 50% of the total weight of the condensation product and the total molecular weight of the condensation product being about 3600;
- 10 (n) Alkyl phenol ethylene oxides wherein the alkyl group contains about 12 carbon atoms and there are approximately 10 moles of ethylene oxide per mole of alkyl phenol the condensation product of alcohols derived from coconut oil and about 10 moles of ethylene oxide per mole of coconut alcohol;
- 15 (o) Dodecyl dimethyl amine oxide;
- (p) Tetradecyl dimethyl phosphine oxide;
- (q) 3-(N,N-dimethyl-N-hexadecylammonio)-propane-1-sulfonate;
- 20 (r) 3-(N,N-dimethyl-N-coconutalkylammonio)-2-hydroxy-propane-1-sulfonate;
- (s) 3-(N,N-diethyl-N-hexadecylammonio)-propane-1-carboxylate;
- (t) Dodecyl-beta-alanine;
- (u) N-dodecyl taurine;
- 25 (v) N-dodecylaspartate;
- (w) coconut alkyl triethylamine chloride;
- (x) dodecyl dimethylbenzylbromide
- 30 (y) dodecyl methyl morpholine methylsulfate;
- (z) dodecyl methyl pyridene nitrate; and
- Mixtures thereof, e.g. 1:1 mixtures of coconut soap and alkyl sulfonates; alkyl sulfates and alkyl benzene sulfonates; coconut oil fatty acid monoglyceride sulfates and fatty acyl isethionates; and alkyl phenol ethylene oxide and dodecyl dimethyl amine oxide.

When in the above Examples, the following sources of available chlorine are substituted either wholly or in part (e.g., a 1:1 ratio by weight) for the chlorinated trisodium orthophosphate substantially equivalent results are obtained in

5 that the sulfamic acid and/or sulfamates improve the speed of bleaching of the compositions: trichlorocyanuric acid, potassium and sodium dichlorocyanurates, 5,5-dimethyl-1,3-dichlorohydantoin, sodium and potassium benzenesulfonchloramines, sodium and potassium para-toluene sulfonchloramines, sodium and potassium chloro

10 bromo cyanurates, 1-chloro-3-bromo-5, 5-dimethyl hydantoin, N-chloro succinimide, trichloro and hexachloro melamines, and mixtures thereof.

When in the above Examples, the following compounds are substituted either wholly or in part (e.g. a 1:1 ratio by

15 weight) for the sulfamic acid and/or sodium sulfamate, substantially equivalent results are obtained in that the speed of bleaching of the compositions is improved: Potassium sulfamate, lithium sulfamate, magnesium sulfamate, calcium sulfamate, and aluminum sulfamate.

20 When, in the above Examples, one of the following additional ingredients is added at a level to provide an amount of bromine equal to about 35% by weight of the available chlorine or an amount of bromide ion equal to about 67% by weight of the available chlorine, substantially equivalent results are obtained

25 in that the sulfamic acid and/or water-soluble sulfamates improve the speed of bleaching of the compositions: sodium bromide, potassium bromide, tetramethyl ammonium bromide, tetraethyl ammonium bromide, dimethyl coconut-alkyl benzyl ammonium bromide,

trimethyl dodecyl ammonium bromide, trimethyl benzyl ammonium bromide, sodium and potassium dibromocyanurates, bromo succinimide, dibromo hydantoin, tetrabromomelamine, and brominated trisodium orthophosphate.

- 5 All of the above compositions can be used to bleach tea stains by forming aqueous slurries or solutions containing from about 1% to about 50% of the compositions so as to prepare an aqueous bleaching composition containing from about 0.006% to about .3% available chlorine and then applying said aqueous
10 bleaching composition to said tea stains.

It is surprising that the sulfamic acid and/or water soluble sulfamate will improve the speed of bleaching of the compositions of this invention without adversely affecting the stability of the composition. It is also surprising that it is
15 only in alkaline media, buffered against pH's below about 10.5, that the sulfamic acid and/or water-soluble sulfamate improve the speed of bleaching of the compositions of this invention. It is also surprising that the compositions of this invention can be used so effectively against tea stains when similar
20 bleaching compositions, without the sulfamic acid or sulfamate present, are less effective.

It is desirable that the compositions of this invention do not contain ammonium or substituted ammonium salts since ammonium and substituted ammonium cations react with the avail-
25 able chlorine, thereby decreasing the bleaching capacity of the compositions.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A bleaching cleanser composition having a superior ability to bleach food stains consisting essentially of:

(a) from 0% to about 95% by weight of a finely divided water-insoluble abrasive;

(b) from 0% to about 10% by weight of a water-soluble anionic, nonionic, zwitterionic, or cationic organic detergent;

(c) from 0% to about 60% by weight alkaline detergency builder;

(d) a stable compound which is a source of available chlorine in an amount to provide from about 0.05% to about 5% available chlorine; and

(e) sufficient sulfamic acid or water-soluble sulfamate to provide a ratio of available chlorine to sulfamic acid of from about 500:1 to about 1:1, the composition having a pH under use conditions of at least 10.5.

2. The composition of Claim 1 wherein there is from about 60% to about 95% abrasive.

3. The composition of Claim 1 wherein the source of available chlorine is selected from the group consisting of: chlorinated trisodium orthophosphate, trichlorocyanuric acid, potassium and sodium dichlorocyanurates, 5,5-dimethyl-1,3-dichlorohydantoin, sodium and potassium benzenesulfonchloramines, sodium and potassium para-toluenesulfonchloramine, sodium and potassium chloro bromo cyanurates, 1-chloro-3-bromo-5,5-dimethyl hydantoin, N-chloro succinimide, trichloro- and hexachloro-melamines, and mixtures thereof.

4. The composition of Claim 1 wherein the source of available chlorine is chlorinated trisodium orthophosphate.

5. The composition of Claim 1 wherein the water-soluble organic detergent is from about 1% to about 6% by weight of the composition.

6. The composition of Claim 1 wherein the alkaline detergency builder is from about 3.5% to about 15% by weight of the composition.

7. The composition of Claim 5 wherein the water-soluble organic detergent is selected from the group consisting of alkali metal alkyl benzene sulfonates wherein the alkyl group contains from about 10 to about 18 carbon atoms and alkali metal alkyl
5 sulfates which contain from about 10 to about 18 carbon atoms.

8. The composition of Claim 7 wherein said alkyl groups are straight chains.

9. The composition of Claim 1 wherein the ratio of available chlorine to sulfamic acid is from about 3:1 to about 6:1.

10. The composition of Claim 1 containing as an additional ingredient a compound selected from the group consisting of inorganic bromides, organic bromides and compounds which provide available bromine in amounts to provide from about 1% to about
5 150% of bromide ion by weight of the amount of available chlorine present when the bromides are present and to provide from about 0.5% to about 50% of bromine by weight of the amount of available

chlorine present when the compounds which provide available bromine are present.

11. The process of bleaching a stain selected from the group consisting of ferric tannate stains and tea stains with the composition of Claim 1 wherein from about 1% to about 50% of said composition is added to water to give an aqueous
5 bleaching composition containing from about 0.006% to about 0.3% available chlorine and then applying said aqueous bleaching composition to said tea stains.

12. The composition of Claim 1 wherein the ratio of available chlorine to sulfamic acid is from about 10:1 to about 1.5:1.

13. The composition of Claim 1 wherein the ratio of available chlorine to sulfamic acid is from about 100:1 to about 1.5:1.

14. The composition of Claim 1 containing as an additional ingredient from about 0.01 to about 1% of a perfume comprising alcohols, esters, aldehydes and ketones.

15. The composition of Claim 14 wherein there is from about 0.1% to about 0.3% of said perfume.